

GEOG 560 – David Casey Final Project Description - Option 1: Annotated Bibliography on the Web
A Geospatial Evaluation of Prescribed Wildfire Habitat Management on Wild Bird Species

Systematic fire mapping is critical for fire ecology, planning and management: A case study in the semi-arid Murray Mallee, south-eastern Australia

<https://doi.org/10.1016/j.landurbplan.2013.04.017>

1,060 fires were mapped in the Murray Mallee region of Victoria, New South Wales and South Australia. Satellite imagery was used to map burn scars indicating fires. 80% of fires mapped were less than 100 hectares. An integrated approach was used to document the spatial and temporal impact of wildfire in this area and how this impacts area biodiversity.

Trading places: opposite colonization and extinction responses of the hermit warbler and western bluebird to the 2021 Dixie Fire

<https://doi.org/10.51492/cfwj.110.14>

Bielski and Wood evaluated the impact of wildfire on bird species at or around the intersection of contrasting habitat types following the Dixie fire in 2021 in California which consumed 389,837 hectares. While some birds became temporarily extinct in some heavily burned areas, in other areas where no burning occurred other birds became less common due to increased tree canopy growth. Extensive mapping of the burn area helped to differentiate no, low and high burn areas, and their subsequent corresponding avian diversity.

Spatial overlap of wildfire and biodiversity in California highlights gap in non-conifer fire research and management

<https://doi.org/10.1111/ddi.13394>

Calhoun et al. used Cal Fire's vegetation land cover map and ArcGIS to assess where California wildfires have occurred between 2000 to 2020 in relationship to different types of ecosystems. Mapping of vegetation type across the state was used to identify different types of ecosystems and then compare these ecosystems to the distribution of wildfires. Between 2000 to 2020 shrubland ecosystems were most subject to wildfire (38%), followed by conifer ecosystems (36%), hardwood forests (17%) and grasslands (9%). Identifying these trends can help future community and habitat management practices.

Future fire scenarios: Predicting the effect of fire management strategies on the trajectory of high-quality habitat for threatened species

<https://doi-org.oregonstate.idm.oclc.org/10.1016/j.biocon.2019.02.004>

Connell et al. used ArcMap mapping software to assess the effect of prescribed fire to manage habitat known to support threatened species. While it is understood that too many fires occurring too frequently can degrade a landscape lowering its ability to support some threatened species, too little wildfire can lead to similarly degraded landscapes that can also lower support for threatened species. The study area was treed mallee shrubland in south-eastern Australia where wildfire simulation modeling assessed different levels of burn intensity and frequency. Prescribed wildfire interventions must carefully target areas to allow proper application of this management practice to effectively support threatened species.

Conserving long unburnt vegetation is important for bird species, guilds and diversity

<https://link-springer-com.oregonstate.idm.oclc.org/content/pdf/10.1007/s10531-016-1196-5.pdf>

Authors Davis et al. surveyed wild bird species identified within 32 different plots of 2 hectares in size each in the Charles Darwin Reserve North-east of Perth Australia. These plots differed in vegetation growth since most recent wildfire from 11-14 years since last fire (YSLF), 19-32 YSLF, 36-46 YSLF, and 60-84 YSLF. Dating the time since the most recent wildfire was accomplished by using fire scar maps created by others, aerial photographs, historical accounts, and the Australian Firewatch website which maps fire scarred vegetation at regular intervals over time. Managing data for these 32 sites and graphically illustrating research findings included the use of GI systems use as was noted in the acknowledgements at the end of the article. One map was included in this article; the use of additional maps showing different layers could help further illustrate findings.

Post-burn and long-term fire effects on plants and birds in floodplain wetlands of the Russian Far East

<https://www-webofscience-com.oregonstate.idm.oclc.org/wos/woscc/full-record/WOS:000464767600016>

Saab et al. selected 26 paired treatment/control study units within seven US national forests with each unit comprising 100-400 hectares. These units were dominated by ponderosa pine. Units ranged from having not experienced wildfire for over 100 years to units having experienced wildfire 10 or more years ago. 95 species of birds were studied in these areas to assess likelihood of occupancy following prescribed burning. The authors found that, overall, the use of fire can be an effective tool in creating habitat for some species while not greatly impacting others. While explicit use of GIS was not mentioned in the article, it is likely that this was used to manage data for the project.

Literature Cited

- Avitabile, S., Callister, K., Kelly, L., Haslem, A., Fraser, L., Nimmo, D.,...Clarke, M. (2013). Systematic fire mapping is critical for fire ecology, planning and management: A case study in the semi-arid Murray Mal lee, south-eastern Australia [Article]. *LANDSCAPE AND URBAN PLANNING*, 117, 81-91. <https://doi.org/10.1016/j.landurbplan.2013.04.017>
- Bielski, L., & Wood, C. (2024). Trading places: opposite colonization and extinction responses of the hermit warbler and western bluebird to the 2021 Dixie Fire [Article]. *CALIFORNIA FISH AND WILDLIFE JOURNAL*, 110(3), Article 14. <https://doi.org/10.51492/cfwj.110.14>
- Calhoun, K., Chapman, M., Tubbesing, C., McInturff, A., Gaynor, K., Van Scoyoc, A.,...Brashares, J. (2022). Spatial overlap of wildfire and biodiversity in California highlights gap in non-conifer fire research and management [Article]. *DIVERSITY AND DISTRIBUTIONS*, 28(3), 529-541. <https://doi.org/10.1111/ddi.13394>
- Connell, J., Watson, S. J., Taylor, R. S., Avitabile, S. C., Schedvin, N., Schneider, K., & Clarke, M. F. (2019). Future fire scenarios: Predicting the effect of fire management strategies on the trajectory of high-quality habitat for threatened species. *Biological Conservation*, 232, 131-141. <https://doi.org.oregonstate.idm.oclc.org/10.1016/j.biocon.2019.02.004>
- Davis, R., Doherty, T., van Etten, E., Radford, J., Holmes, F., Knuckey, C., & Davis, B. (2016). Conserving long unburnt vegetation is important for bird species, guilds and diversity [Article]. *BIODIVERSITY AND CONSERVATION*, 25(13), 2709-2722. <https://doi.org/10.1007/s10531-016-1196-5>
- DellaSala, D. A., Hutto, R. L., Hanson, C. T., Bond, M. L., Ingalsbee, T., Odion, D., & Baker, W. L. (2017). Accommodating Mixed-Severity Fire to Restore and Maintain Ecosystem Integrity with a Focus on the Sierra Nevada of California, USA. *Fire Ecology*, 13(2), 148-171. <https://doi.org/10.4996/fireecology.130248173>
- Denny, K., Shipley, L., Perera-Romero, L., Meddens, A., Volpato, G., & Thornton, D. (2026). The effects of fire severity and heterogeneity on post-fire occupancy of a terrestrial wildlife community in the Northwestern United States [Article]. *FOREST ECOLOGY AND MANAGEMENT*, 606, Article 123525. <https://doi.org/10.1016/j.foreco.2026.123525>
- Greenberg, C. H., Moorman, C. E., Elliott, K. J., Martin, K., Hopey, M., & Caldwell, P. V. (2023). Breeding bird abundance and species diversity greatest in high-severity wildfire patches in central hardwood forests. *Forest Ecology and Management*, 529, 120715. <https://doi.org/https://doi.org/10.1016/j.foreco.2022.120715>
- Heim, R. J., Hölzel, N., Heinken, T., Kamp, J., Thomas, A., Darman, G. F.,...Heim, W. (2019). Post-burn and long-term fire effects on plants and birds in floodplain wetlands of the Russian Far East. *Biodiversity and Conservation*, 28(6), 1611-1628. <https://doi.org/10.1007/s10531-019-01746-3>
- Hutto, R. L., Hutto, R. R., & Hutto, P. L. (2020). Patterns of bird species occurrence in relation to anthropogenic and wildfire disturbance: Management implications. *Forest Ecology and Management*, 461, 117942. <https://doi.org/https://doi.org/10.1016/j.foreco.2020.117942>
- Ivey, M. A., Weidig, N. C., Ivory, A. A., & Donovan, V. M. (2026). Regional differences in infilling and land-use conversion characterize woody cover increases across the Eastern United States. *Forest Ecology and Management*, 603, 123446. <https://doi.org/https://doi.org/10.1016/j.foreco.2025.123446>
- Jones, H., Merriell, B., Swan, M., Johnson, M., & Siegel, R. (2026). Changes to vegetation structure and tree species composition drive bird species turnover following disturbance in southwestern United States mixed-conifer forest [Article]. *FOREST ECOLOGY AND MANAGEMENT*, 609, Article 123660. <https://doi.org/10.1016/j.foreco.2026.123660>
- Jones, H., Merriell, B., Swan, M., Johnson, M., & Siegel, R. (2026). Changes to vegetation structure and tree species composition drive bird species turnover following disturbance in southwestern United States mixed-conifer forest. *Forest Ecology and Management*, 609, 123660. <https://doi.org/https://doi.org/10.1016/j.foreco.2026.123660>
- Latif, Q. S., Saab, V. A., & Dudley, J. G. (2021). Prescribed fire limits wildfire severity without altering ecological importance for birds. *Fire Ecology*, 17(1), 37. <https://doi.org/10.1186/s42408-021-00123-2>
- Lydersen, J., & North, M. (2012). Topographic Variation in Structure of Mixed-Conifer Forests Under an Active-Fire Regime [Article]. *ECOSYSTEMS*, 15(7), 1134-1146. <https://doi.org/10.1007/s10021-012-9573-8>
- Saab, V. A., Latif, Q. R., Block, W. M., & Dudley, J. G. (2022). Short-term benefits of prescribed fire to bird communities of dry forests. *Fire Ecology*, 18(1), 4. <https://doi.org/10.1186/s42408-022-00130-x>
- Sitters, H., Di Stefano, J., Christie, F. J., Sunnucks, P., & York, A. (2015). Bird diversity increases after patchy prescribed

- fire: implications from a before–after control–impact study. *International Journal of Wildland Fire*, 24(5), 690-701. <https://doi.org/10.1071/wf14123>
- Sitters, H., Di Stefano, J., Wills, T., Swan, M., & York, A. (2018). Survey design for precise fire management conservation targets. *Ecological Applications*, 28(1), 35-45. <https://doi.org/https://doi.org/10.1002/eap.1624>
- Steel, Z. L., Koontz, M. J., & Safford, H. D. (2018). The changing landscape of wildfire: burn pattern trends and implications for California's yellow pine and mixed conifer forests. *Landscape Ecology*, 33(7), 1159-1176. <https://doi.org/10.1007/s10980-018-0665-5>
- Taylor, R. S., Watson, S. J., Bennett, A. F., & Clarke, M. F. (2013). Which fire management strategies benefit biodiversity? A landscape-perspective case study using birds in mallee ecosystems of south-eastern Australia. *Biological Conservation*, 159, 248-256. <https://doi.org/https://doi.org/10.1016/j.biocon.2012.12.005>
- White, A., Manley, P., Tarbill, G., Richardson, T., Russell, R., Safford, H., & Dobrowski, S. (2016). Avian community responses to post-fire forest structure: implications for fire management in mixed conifer forests [Article]. *ANIMAL CONSERVATION*, 19(3), 256-264. <https://doi.org/10.1111/acv.12237>
- Williams, C., Terhune, T., Parke, J., Matseur, E., & Cecil, J. (2024). Active forest stewardship benefits priority birds in the New Jersey Pine Barrens [Article]. *PLOS ONE*, 19(6), Article e0302040. <https://doi.org/10.1371/journal.pone.0302040>
- Wills, A., Liddelow, G., & Tunsell, V. (2020). Wildfire and fire mosaic effects on bird species richness and community composition in south-western Australia [Article]. *FIRE ECOLOGY*, 16(1), Article 5. <https://doi.org/10.1186/s42408-019-0065-5>
- Yao, J., Murray, D., Adhikari, A., & White, J. (2012). Fire in a sub-humid woodland: The balance of carbon sequestration and habitat conservation [Article]. *FOREST ECOLOGY AND MANAGEMENT*, 280, 40-51. <https://doi.org/10.1016/j.foreco.2012.05.042>